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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/768,174	02/02/2004	Harumi Kaga		3641
<div>George A. Loud, Esquire BACON & THOMAS Fourth Floor 625 Slaters Lane Alexandria, VA 22314-1176</div>				
			<div>EXAMINER ISSAC, ROY P</div>	
			<div>ART UNIT 1623</div>	<div>PAPER NUMBER</div>
			<div>MAIL DATE 10/31/2007</div>	<div>DELIVERY MODE PAPER</div>

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/768,174	KAGA ET AL.	
	Examiner	Art Unit	
	Roy P. Issac	1623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 August 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) 9-25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 26-35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office Action is in response to Applicant's amendment/ remarks/ response filed 8/2/07, wherein claims 1-2, 5-7 have been amended, and claims 21-35 are newly submitted.

The newly submitted claims 21-25 directed a method of preparation of hyperbranched sugars are independent and distinct for the reasons pointed out in the restriction requirement between groups I and II and further discussed in the previous office action. Claims 21-25 are grouped with invention II.

- I. Claims 1-8 and 26-35 drawn to hyperbranched sugars, classified in class 536, subclass 124.
- II. Claims 9-25 drawn to a method for the preparation of hyperbranched sugars, classified in class 536, subclass 124.

Newly submitted claims 21-25 directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make another and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product as claimed can be made by another and materially different process. For example, polymerization by cationic ring cleavage of glucopyranose sugars can be used to produce hyperbranched sugars. (Schuerch et. al.; Of record, Included by the applicant). Since applicant has received an action on the merits for the originally

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presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 9-25 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Rejections Withdrawn

The rejection under 35 USC 112 second paragraph, with respect to claims 5-6 in regards to the recitation "type compound" in reference to various sugars is withdrawn since the term is deleted from claims 5-6.

Applicants' submission of the English language translation of the foreign priority documents perfecting the claim of benefit to foreign priority date of February 3, 2003 removes Kunz as a prior art reference under 102(e). Thus rejection of claims 1, 5 and 6 under section 102(e) is withdrawn. Since the WIPO publication of Kunz application was in German, the 371(c) date of Kunz is July 22, 2004.

Applicants' amendments inserting the recitation, "copolymer" in claim 2 will overcome the rejection under section 102 over Schuerch et. al. Applicant's arguments, see Page 16, filed 8/2/07, with respect to claims 1-4 and 6-8 have been fully considered and are persuasive. The rejection of claims 1-4 and 6-8 has been withdrawn. Since Schuerch et. al. discloses a 1,6 anhydrosugar and the claims herein are limited to an epoxy type anhydride, the arguments were found persuasive.

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The following are new grounds of rejections:

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 34-35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims recite chemical structures with unspecified ends. One of skill in the art would not be able ascertain the metes and bounds of the open-ended structures herein.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4, 7-8, 26-27 and 30-32 are rejected under 35 U.S.C. 102(b) as being anticipated by Toshifumi et. al. (Abstracts of Papers, 224th ACS National Meeting, August 2002; PTO-892).

Toshifumi discloses the synthesis of copolymers using 1,6-anhydro-beta-D-mannopyranose and 1,6-anhydro-beta-D-glucopyranose to produce hyperbranched polysaccharide with a molecular weight of 10,500 and a degree of polymerization of 0.65. Toshifumi discloses the method as useful for producing hyperbranched polysaccharides with narrow polydispersity.

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Claims 1, 3-4 and 7-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Sunder et. al. (Macromolecules, 1999, 32, 4240-4246; PTO-892).

Sunder et. al. discloses the preparation of hyperbranched polymers using a compound of Formula 2 herein wherein m is zero, R1 and R4 are H and p is 1. The degree of branching was disclosed as between 0.53 and 0.59. (Page 4244, column 1, Paragraph 1).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5-6, 28-29 and 33-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toshifumi et. al. (Abstracts of Papers, 224th ACS National Meeting, August 2002; PTO-892) in view of Satoh et. al. (Macromolecules, 1996, 29(21), 6681-6684; PTO-892) further in view of Kamada et.al. (Tetrahedron, 1999, 3667-3669; PTO-892).

The disclosure of Toshifumi et. al. is discussed above in the 102 rejection.

Toshifumi et. al. does not expressly disclose the use of dianhydrosugars in the synthesis of hyperbranched copolymers.

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Satoh et. al. discloses the use of dianhydrohexitols for the synthesis of copolymers and homopolymers.

Kamada et. al. discloses the synthesis of a series of dianhydrohexitols and dianhydropentitols and discloses them useful for the synthesis of carbohydrate polymers.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to prepare hyperbranched copolymers of carbohydrates since Toshifumi et. al. disclosed a method for preparing hyperbranched polysaccharides and, Satoh et. al. and Kamada et. al. discloses dianhydrohexitols and dianhydropentitols useful for the synthesis of carbohydrate polymers. All the claimed steps herein are known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded predictable results to one of ordinary skill in the art at the time of the invention.

Therefore, one of ordinary skill in the art would have reasonably expected that the use of dianhydrohexitols as a starting material for the synthesis of hyperbranched copolymers of polysaccharides would have resulted in substantially similar or better effects.

Thus the claimed invention as a whole is clearly prima facie obvious over the combined teachings of the prior art.

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No Claim is allowed.

This rejection is made NON-FINAL due to the new/modified grounds of rejection.

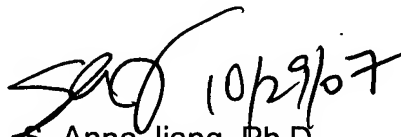
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Roy P. Issac whose telephone number is 571-272-2674.

The examiner can normally be reached on 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shaojia Anna Jiang can be reached on 571-272-0627. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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